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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/702,346
Filing Date: November 06, 2003
Appellant(s): BRATEK ET AL.

Gary J. Cunningham
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/24/06 appealing from the Office action mailed 6/23/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,158,390 Ito et al. 10-1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pepperling et al. (6,715,360) in view of Ito et al. (5,158,390).

Regarding **claim 1**, Pepperling discloses assembling a high pressure sensor (72) to a housing (90) by threading, however as an alternative to threading, Pepperling discloses configuring the outer portion (78) of the sensor (72) for a press-fit (col. 4, lines 18-22) with the housing (90). Pepperling discloses the pressure sensor (72) containing a pressure port (74) having a material inherently with a first hardness and a housing (90), wherein the pressure port has a mounting boss (78) and the housing has a receptacle (not labeled, fig. 3) for receiving the mounting boss. *See column 3, line 59, - column 4, line 31, and figure 3 for further clarification.*

With respect to **claim 1**, Pepperling, however, does not disclose the following: the housing having a second hardness less than the first hardness; the mounting boss of the pressure port being configured with knurls thereon; or the knurls oriented parallel to an axis of the pressure port; pressing the mounting boss of the pressure port into the receptacle of the housing along a direction of the axis such that the knurls deform the receptacle of the housing to conform about the knurls to define a semi-rigid mount.

Ito discloses a housing (1) having a second hardness less than the first hardness of member (3) because the receptacle (2) of the housing (1) is deformed in a depressed shape (col. 3, lines 42-44), wherein the mounting boss (4) is configured with straight

knurls (i.e. hump portion and valley portion; col. 3, lines 41-42) thereon oriented parallel to an axis of the member (3). The mounting boss (4) is pressed into the receptacle of housing (1) along a direction of the axis such that the knurls deform the receptacle (2) of the housing (1) to conform about the knurls to define a semi-rigid mount. The knurls allow the member (3) and housing (1) to intimately mesh thereby forming a firm joint. *See column 3, lines 23-46 and Fig .1 for further clarification.*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the housing of Pepperling with a second hardness less than the first hardness, to provide the mounting boss of the pressure port with straight knurls thereon such that the knurls are oriented parallel to an axis of the pressure port, to press the mounting boss of the pressure port into the receptacle of the housing along a direction of the axis such that the knurls deform the receptacle of the housing to conform about the knurls to define a semi-rigid mount, in light of the teachings of Ito, in order to firmly join the components together by press-fit, and to intimately mesh the inner and outer surfaces of the components thereby forming a firm jointing.

Regarding **claim 2**, Pepperling discloses a shoulder (not labeled, fig. 3) being configured on the mounting boss, and the mounting boss (78) is pressed into the receptacle of the housing (90) up to the shoulder.

With respect to **claims 3-6**, Pepperling does not disclose providing a stainless steel pressure port and an aluminum housing; providing a length of the knurls that is less than a depth of the receptacle; configuring the knurls of the mounting boss and the

receptacle to have an interference fit; or configuring the mounting boss with straight knurls.

Ito discloses housing (1) being comprised of aluminum, and the member (3) being comprised of stainless steel. Ito also discloses a length of the knurls (i.e. peaks and valleys 4, 5) being less than a depth of the receptacle (2, fig. 3c), wherein the knurls of the mounting boss and the receptacle are configured to have an interference fit (i.e. press-fit) and the knurls are straight. *See column 3, line 23 – column 4, line 57; column 6, lines 36-35; and figure 3c for further clarification.*

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to provide the pressure port of Pepperling as stainless steel and the housing of Pepperling as aluminum, to provide a length of the knurls that is less than a depth of the receptacle, and to configure the knurls of the mounting boss and the receptacle to have an interference fit, in order to firmly join steel and aluminum components to one another by press-fit.

Regarding **claim 7**, Pepperling discloses applying a seal (i.e. adhesive, col. 4, lines 23-25) to the press-fit area to seal the pressure port.

Regarding **claim 8**, Pepperling discloses assembling a high pressure sensor (72) to a housing (90) by threading, however as an alternative to threading, Pepperling discloses configuring the outer portion (78) of the sensor (72) for a press-fit (col. 4, lines 18-22) with the housing (90). Pepperling discloses the pressure sensor (72) containing a pressure port (74) having a material inherently with a first hardness and a housing (90), wherein the pressure port has a mounting boss (78) and the housing has a

receptacle (not labeled, Fig. 3) for receiving the mounting boss. The mounting boss (78) of Pepperling has a shoulder (not labeled, Fig. 3), and the mounting boss (78) of the pressure port is pressed into the receptacle of the housing (90) along an axial direction of the pressure port up to the shoulder (not labeled, Fig. 3). *See column 3, line 59, - column 4, line 31, and figure 3 for further clarification.*

With respect to **claim 8**, Pepperling, however, does not disclose the following: the housing having a second hardness less than the first hardness; the mounting boss of the pressure port being configured with straight knurls thereon; the straight knurls oriented parallel to an axis of the pressure port; or pressing the mounting boss of the pressure port into the receptacle of the housing along an axial direction of the pressure port up to the shoulder such that the straight knurls deform the receptacle of the housing to conform about the knurls to define a semi-rigid mount.

Ito discloses a housing (1) having a second hardness less than the first hardness of member (3) because the receptacle (2) of the housing (1) is deformed in a depressed shape (col. 3, lines 42-44), wherein the mounting boss (4) is configured with straight knurls (i.e. hump portion and valley portion; col. 3, lines 41-42) thereon oriented parallel to an axis of the member (3). The mounting boss (4) is pressed along an axial direction of the pressure port into the receptacle of housing (1) up to the shoulder such that the straight knurls deform the receptacle (2) of the housing (1) to conform about the knurls to define a semi-rigid mount. The knurls allow the member (3) and housing (1) to intimately mesh thereby forming a firm joint. *See column 3, lines 23-46 and Fig .1 for further clarification.*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the housing of Pepperling with a second hardness less than the first hardness, to provide the mounting boss of the pressure port being with straight knurls thereon such that the straight knurls are oriented parallel to an axis of the pressure port, and to press the mounting boss of the pressure port into the receptacle of the housing along an axial direction of the pressure port up to the shoulder such that the straight knurls deform the receptacle of the housing to conform about the knurls to define a semi-rigid mount, in light of the teachings of Ito, in order to firmly join the components together by press-fit, and to intimately mesh the inner and outer surfaces of the components thereby forming a firm jointing.

With respect to **claims 9-11**, Pepperling at Fig. 3 discloses the mounting boss having a bevel end, however, Pepperling does not disclose configuring the straight knurls to have bevel on an end thereof, providing a hardened stainless steel pressure port and an aluminum housing, or configuring the straight knurls of the mounting boss and the receptacle to have an interference fit wherein a length of the straight knurls is less than a depth of the receptacle.

Ito discloses housing (1) being comprised of aluminum, and the member (3) being comprised of stainless steel. Ito also discloses a length of the straight knurls (i.e. peaks and valleys 4, 5) being less than a depth of the receptacle (2, fig. 3c), wherein the knurls of the mounting boss and the receptacle are configured to have an interference fit (i.e. press-fit). *See column 3, line 23 – column 4, line 57; column 6, lines 36-35; and figure 3c for further clarification.*

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to provide the pressure port of Pepperling as stainless steel and the housing of Pepperling as aluminum, to provide a length of the knurls that is less than a depth of the receptacle, and to configure the knurls of the mounting boss and the receptacle to have an interference fit, in order to firmly join steel and aluminum components to one another by press-fit. In addition, the resulting combination would a mounting boss with a bevel end and knurls provided on the mounting boss.

Regarding **claim 12**, Pepperling/Ito discloses all of the claimed subject matter except for using silicon glue as the seal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use silicone glue as the seal, since it is well known to use silicone based adhesive to seal pressure sensing devices and furthermore it has also been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.*

Note that the recitation *"high pressure sensor for use in an automotive environment"* in **claims 1 and 8** has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

(10) Response to Argument

Appellant states that there is no motivation to combine the references.

In response to appellant's statement that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the primary reference to Pepperling as explained in detail above discloses all of the claimed subject matter except for knurls in claim 1 and straight knurls in claim 8. Ito discloses providing knurls on one component (3) to connect with another component (1) wherein the straight knurls (i.e. hump portion 4 and valley portion 5; col. 3, lines 40-46) are disposed along the length of component (3) such that these portions/knurls (4, 5) are press fit into the receptacle (2) of the component (1) such that the inner surface of the receptacle (2) is deformed creating an intimate meshing between the components (1, 3) thereby forming a firm joint.

Appellant states that the Examiner provides no evidence that those concerned with problems facing pressure sensor designers would consult rotor design references.

In response, the Examiner maintains that since Pepperling discloses all of the claimed subject matter except for providing knurls in claims 1 and 8, one of ordinary skill in the art would look to any art concerned with providing knurls in order to sustain a

press fit connection. The concept of providing members/components with knurls for press fitting is well known as evidenced by Ito and the other references of record cited in this particular application. In addition, the secondary reference to Ito is clearly concerned with providing knurls to provide a better press fit connection between components (1, 3) by intimately meshing the inner and outer surfaces of the respective components thereby obtaining a firm jointing.

Appellant states that the Examiner provides no facts or evidence that a person of ordinary skill in the art would look to solutions for torquing forces when considering design problems for a part subjected to lateral forces.

In response, the Examiner maintains that although Pepperling is not concerned with torquing forces, the secondary reference to Ito is not entirely concerned with torquing as well which is evidenced by the teachings of intimately meshing the components (1, 3) to form a firm jointing. The knurls as taught by Ito aid in press-fitting the components to one another such that the inner surface of component (1) is deformed in a depressed shape to the outer surface of component (3) which thereby creates the intimate meshing and subsequently the firm jointing. The teaching of the knurls and their purpose as disclosed at column 3, lines 40-46 is not concerned with the torquing forces but is concerned with creating an intimate meshing and hence a firm jointing.

Appellant states that the modification suggested by the Examiner would render the prior art unsatisfactory for its intended purpose.

In response, the Examiner maintains that since Pepperling clearly discloses at column 4, lines 18-22 that attachment portion (78) can be modified for a press-fit that one of ordinary skill in the art would look to a teaching that provided the best possible configuration for providing a successful joint, and in this case that successful teaching is provided by Ito. Ito clearly provides the teaching of how to modify a surface in order to achieve a successful press fit connection between components. The combination of the Pepperling with Ito does not render the prior art unsatisfactory for its intended purpose because the high pressure sensor still functions in its intended manner, but with a firmer connection between the sensor and the housing.

Appellant further states that the instant claims attempt to actually allow some lateral movement rather than firmly jointing the pressure sensor and housing because if a rigid or firmly jointed attachment were used, mounting stress sensor error could be introduced to pressure readings from such a sensor would destroy the purpose of the sensor.

In response, the Examiner maintains that the claims as presented do not contain limitations which in any would attempt to allow some lateral movement rather than firmly jointing the pressure sensor and housing. There are no claim limitations which require a minimal amount of lateral movement. In addition, in a press-fit connection for stationary components, no lateral movement is the minimum requirement, and if the sensor were allowed to move it would defeat the purpose of Pepperling. Regardless, to reiterate, the appellant is merely arguing limitations which are not contained in any of claims 1-12.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

JERMIE E. COZART
PRIMARY EXAMINER

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